We claim:

1. A process for the oligomerization of olefins, in which an olefin is brought into contact with a catalyst system comprising

   a) at least one transition metal complex with a polydentate complexing ligand and

   b) an alkylaluminoxane in such amounts that the molar ratio of aluminum:transition metal is greater than 10,

   wherein at least part of the amount of the transition metal complex is added continuously or in portions during the oligomerization.

2. A process as claimed in claim 1, wherein a partial amount of the transition metal complex is initially charged together with the alkylaluminoxane and the molar ratio of aluminum:transition metal is reduced to less than half of the initial value by addition of at least one further partial amount of the transition metal complex.

3. A process as claimed in claim 2, wherein the initial molar ratio of aluminum:transition metal is greater than 100.

4. A process as claimed in any of the preceding claims, wherein the transition metal is chromium.

5. A process as claimed in any of the preceding claims, wherein the complexing ligand is a polydentate nitrogen-containing complexing ligand.

6. A process as claimed in claim 5, wherein the complexing ligand comprises a 1,3,5-triazacyclohexane or 1,4,7-triazacyclononane skeleton.

7. A process as claimed in any of the preceding claims, wherein the alkylaluminoxane is methylaluminoxane.